

**IN THE SPECIFICATION**

Please substitute the following amended paragraph(s) and/or section(s):

Page 1, at line 8:

Hitherto, a semiconductor device comprising an insulating ceramic board, a metal circuit layer provided on one surface of the board, a heat radiating metal plate fixed on the other surface of the board, and semiconductor tips for controlling an electric voltage and current soldered on the metal circuit layer has been proposed. One or more semiconductor devices mentioned above are bonded with a soldering material on one surface of a metal base plate ( heat sink ) or on a composite member, and a heat ~~radiating~~ releasing fin or fins are mounted through ~~heat-radiating~~ thermal conductive greases on the other surface of the metal base plate.

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(4) The ~~heat transmission~~ thermal conductivity of a ~~heat-radiating~~ thermal conductive grease is low remarkably. That is, the ~~heat-transmissibility~~ thermal conductivity of the ~~heat-radiating~~ thermal conductive grease on the market is several  $W/m \cdot K$  at most.

The above problems (1) to (3) can be solved by using an insulating ceramic substrate bonded directly to a base plate. However, the problem (4) cannot be solved because no materials of higher ~~heat-transmissibility~~ thermal conductivity can be available on the market.

Japanese Patent Application Laid-Open No. 363052/92 discloses a semiconductor device, wherein heat radiating fins are directly bonded on a ceramic board by a brazing method. However, if the fin of aluminum large in coefficient of ~~linear~~ thermal expansion and volume is directly bonded on the thin ceramic board small in coefficient of ~~linear~~ thermal expansion, the ceramic board would be separated from the aluminum fin or the ceramic board would be damaged by the stress due to the difference in coefficient of ~~linear~~ thermal expansion between the fin and the ceramic board, when

they are heated and cooled alternately and frequently and elevated in temperature as like as in the actual power module operation.

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According to the present invention, lead solder is not used for connecting the ceramic circuit board with the metal base plate or the composite member on the contrary to the conventional manner, so that the good life-environment can be realized, the loss of heat transmission and the deterioration of the heat radiation can be reduced. Further, there is no risk to reduce the yield rate of the manufacturing due to the voids of lead solder. The assembling step wherein the metal base plate or the composite member is soldered can be omitted. Further, it is not necessary to use the ~~heat radiating~~ thermal conductive grease for connecting the ceramic circuit board with the heats radiating fins, so that the deterioration of the heat transmission can be prevented.

The problems due to the use of the lead solder can be solved by connecting the ceramic substrate, such as aluminum nitride to the aluminum circuit plate and the heat radiating fins with the brazing material of aluminum series. However, they are heated and cooled alternately and frequently, when they are used as the power module and installed in the vehicles, such as automobiles and electric cars, so that the peeling may be generated at the boundary face between the ceramic board and the aluminum plate or the ceramic board may be damaged due to the difference in coefficient of ~~heat~~ thermal expansion between the ceramics and the aluminum plate, and due to the use of the brazing material. The thickness of the brazing material actually used is up to several hundreds  $\mu\text{m}$  and very small compared with the thickness of the heat radiating plate or fin of several mm.